Day : Monday
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Inventor Name Search Result

Your Search was:

Last Name = ZHANG
First Name = JIANPING

Application#	Patent#	Status	Date Filed	Title	Inventor Name
60458818	Not Issued	020	03/28/2003	PROCESS AND APPARATUS FOR CONTROLLING FLOW IN A MULTIPHASE REACTOR	ZHANG, JIANPING
60344229	Not Issued	020	12/28/2001	WATER REMOVAL IN FISCHER-TROPSCH PROCESSES	ZHANG, JIANPING
60344228	Not Issued	020	12/28/2001	METHOD FOR REDUCING WATER CONCENTRATION IN A MULTI-PHASE COLUMN REACTOR	ZHANG, JIANPING
60307742	Not Issued	020	07/25/2001	MINIMIZING THE VOLUME OR MAXIMIZING THE PRODUCTION RATE OF SLURRY BUBBLE REACTORS BY USING LARGE GAS FLOW RATES AND MODERATE SINGLE PASS CONVERSION	ZHANG, JIANPING
10402498	Not Issued	019	03/28/2003	GAS AGITATED MULTIPHASE CATALYTIC REACTOR WITH REDUCED BACKMIXING	ZHANG, JIANPING
10395912	Not Issued	019	03/24/2003	COMMERCIAL FISCHER-TROPSCH REACTOR	ZHANG, JIANPING
10320311	Not Issued	030	12/16/2002	WATER REMOVAL IN FISCHER-TROPSCH PROCESSES	ZHANG, JIANPING
10315571	Not Issued	030	12/10/2002	METHOD FOR REDUCING WATER CONCENTRATION IN A MULTI-PHASE	ZHANG, JIANPING

				COLUMN REACTOR	
10238008	Not Issued	030	09/09/2002	GAS AGITATED MULTIPHASE REACTOR WITH STATIONARY CATALYST SOLID PHASE	ZHANG, JIANPING
10205215	Not Issued	030	07/25/2002	MINIMIZING THE VOLUME OR MAXIMIZING THE PRODUCTION RATE OF SLURRY BUBBLE REACTORS BY USING LARGE GAS FLOW RATES AND MODERATE SINGLE PASS CONVERSION	ZHANG, JIANPING
10193357	Not Issued	030	07/11/2002	METHOD FOR REDUCING THE MAXIMUM WATER CONCENTRATION IN A MULTI-PHASE COLUMN REACTOR	ZHANG, JIANPING
10023258	Not Issued	030	12/14/2001	SLURRY BED REACTOR	ZHANG, JIANPING
09559936	Not Issued	094	04/27/2000	DEPOLARIZED SEMICONDUCTOR LASER SOURCES	ZHANG, JIANPING

Inventor Search Completed: No Records to Display.

Search Another: Inventor

Last Name Zhang **First Name** Jianping

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 NEWS 31  Apr 14  MEDLINE Reload
 NEWS 32  Apr 17  Polymer searching in REGISTRY enhanced
 NEWS 33  Jun 13  Indexing from 1947 to 1956 added to records in CA/CAPLUS
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 NEWS 39  May 16  CHEMREACT will be removed from STN
 NEWS 40  May 19  Simultaneous left and right truncation added to WSCA
 NEWS 41  May 19  RAPRA enhanced with new search field, simultaneous left and
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 NEWS 42  Jun 06  Simultaneous left and right truncation added to CBNB
 NEWS 43  Jun 06  PASCAL enhanced with additional data
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L2            1 WO 200172928/PN
                   (WO2001072928/PN)

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L2 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:730909 CAPLUS
DOCUMENT NUMBER: 135:275198
TITLE: Method for producing hydrocarbons from syngas in a three-phase reactor
INVENTOR(S): Schweitzer, Jean-Marc; Galtier, Pierre; Hugues, Francois; Maretto, Cristina
PATENT ASSIGNEE(S): Institut Francais du Petrole, Fr.; Eni S.p.A.; Agip Petroli S.p.A.
SOURCE: PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
INT. PATENT CLASSIF.:
MAIN: C10G002-00
CLASSIFICATION: 51-11 (Fossil Fuels, Derivatives, and Related Products)
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
WO 2001072928	A1	20011004	WO 2001-FR595	20010228	<--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM					
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG					
FR 2806736	A1	20010928	FR 2000-3925	20000327	
FR 2806736	B1	20020510			
EP 1268709	A1	20030102	EP 2001-909933	20010228	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR					
NO 2002004608	A	20020926	NO 2002-4608	20020926	
US 2003109590	A1	20030612	US 2002-239395	20020926	

PRIORITY APPLN. INFO.: FR 2000-3925 A 20000327
WO 2001-FR595 W 20010228

ABSTRACT:
The invention concerns a method for the synthesis of hydrocarbons by reacting a mixt. comprising at least carbon monoxide and hydrogen in the presence of a catalyst carried out in a three-phase reactor, wherein the liq. Peclet no. ranges between 0 (excluded) and .apprx.10, at a gas surface speed Ug preferably <35 cm./s, to promote the transfer of the gas into the liq. phase and avoid too much attrition of catalyst grains.

SUPPL. TERM: fuel gas manufg syngas catalyst
INDEX TERM: Fuel gas manufacturing
Synthesis gas
(method for producing hydrocarbons from syngas in a three-phase reactor)
INDEX TERM: Rare earth oxides
ROLE: CAT (Catalyst use); USES (Uses)
(method for producing hydrocarbons from syngas in a three-phase reactor)
INDEX TERM: 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses
7440-48-4, Cobalt, uses 7631-86-9, Silica, uses
13463-67-7, Titania, uses

ROLE: CAT (Catalyst use); USES (Uses)
(method for producing hydrocarbons from syngas in a three-phase reactor)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD.

REFERENCE(S):
(1) Exxon Research Engineering Co; EP 0450861 B 1991 CAPLUS
(2) Iglesia, E; US 5348982 A 1994
(3) Sasol Chemicals Europ Ltd; WO 9903574 A 1999 CAPLUS

DOCUMENT-IDENTIFIER: US 5116879 A
**** See image for Certificate of Correction ****
TITLE: Process using a supported catalyst for hydrocarbon synthesis

Brief Summary Text (5):
The reaction to convert carbon monoxide and hydrogen mixtures (so called syngas) to higher hydrocarbons over metallic catalysts has been known since the turn of the century. This reaction is commonly referred to as the Fischer-Tropsch or F-T synthesis. The F-T synthesis was exploited commercially during WWII in Germany. By 1944 a total of nine F-T plants were operating in Germany, primarily using a catalyst composed of cobalt, magnesium oxide, thorium oxide, and kieselguhr, in the relative composition 100:5:8:200. Later, most of the thoria was replaced by magnesia, primarily for economic reasons. Currently, commercial Fischer-Tropsch plants, which use a precipitated iron-based catalyst which contains various promoters to improve the stability and product distribution, are operating in South Africa.

Brief Summary Text (6):
The common F-T catalysts are nickel, cobalt, and iron. Nickel was probably the first substance to be recognized as capable of catalyzing the reaction of syngas to hydrocarbons, producing mainly methane (see, for example, R. B. Anderson, The Fischer-Tropsch Synthesis, Academic Press (1984), p. 2). Iron and cobalt are able to produce higher chain hydrocarbons and are, thus, preferred as catalysts for the production of liquid hydrocarbons. However, other metals are also capable of catalyzing the conversion of synthesis gas. Among the Group VIII metals, ruthenium is a very active catalyst for the formation of hydrocarbons from syngas. Its activity at low temperatures is higher than that of Fe, Co, or Ni, and it produces a large amount of heavy hydrocarbons. At high pressures, it produces a large amount of high molecular weight waxes. Other metals which are highly active, such as rhodium, yield high amounts of oxygenated materials (see Ichikawa, Chemtech, 6, 74 (1982)). Osmium has been found to be moderately active, while Pt, Pd, and Ir exhibit low activity (see Pichler, Advances in Catalysis, vol. IV, Academic Press, N.Y. (1952), R. B. Anderson, The Fischer-Tropsch Synthesis, supra and Vannice, Journal of Catalysis, 50, 228-236).

Brief Summary Text (7):
Other metals that have been investigated include rhenium, molybdenum, and chromium, but these exhibit very low activity with most of the product being methane (see R. B. Anderson, The Fischer-Tropsch Synthesis, supra).

Brief Summary Text (9):
Combinations of cobalt with non-F-T active metals have also been reported for the conversion of synthesis gas to specific products and, in some cases, at specific conditions. In Nakaoji, U.S. Pat. No. 3,988,344, the combination of cobalt with a second Group VIII metal and tungsten is claimed for the enhanced production of methane from synthesis gas. Knifton, U.S. Pat. No. 4,390,734 and Japanese Kokai 57/130932 describe the combination of Co and Rh for the production of oxygenated products, such as glycols or aldehydes. Fischer-Tropsch catalysts consisting of combinations of cobalt with either platinum or palladium, supported on a variety of solids, including alumina, have been reported by Sapienza et al., U.S. Pat. No. 4,396,539. These catalysts, however, relied on preparation from the metal carbonyls in order to form solid solutions on the surface of the solid support and were distinguished by an x-ray impermeable layer covering the support, thereby resulting in a catalyst exhibiting a unique x-ray diffraction pattern in which the structure of the solid support was completely masked by the metallic components. In

and more preferably from 1000 to 10,000 cm.sup.3 /g/h, where gaseous hourly space velocity is defined as the volume of gas (measured at standard temperature and pressure) fed per unit weight of catalyst per hour.

Detailed Description Text (25):
The hydrocarbon products from Fischer-Tropsch synthesis are distributed from methane to high boiling compounds according to the so called Schulz-Flory distribution, well known to those skilled in the art. The Schulz-Flory distribution is expressed mathematically by the Schulz-Flory equation:

Detailed Description Text (28):
It is well known, and also shown in the following examples, that the metals from the group consisting of platinum, iridium, and rhodium are alone low activity catalysts for Fischer-Tropsch synthesis producing products which are predominantly methane, or in the case of rhodium, oxygenates.

CLAIMS:

1. A process for the production of hydrocarbons comprising the step of contacting a synthesis gas feed comprised of hydrogen and carbon monoxide with a catalyst consisting essentially of an amount of cobalt catalytically active in a Fischer-Tropsch synthesis, and at least one second metal selected from the group consisting of iridium, rhodium, and mixtures thereof composited on an alumina support, said second metal being present in relatively lesser amounts than the cobalt content of the catalyst, at a temperature, gas hourly space velocity and a pressure useful for promoting a Fischer-Tropsch Synthesis.

3. A process for the production of hydrocarbons comprising the step of contacting a synthesis gas feed comprised of hydrogen and carbon monoxide with a catalyst consisting essentially of an amount of cobalt catalytically active in a Fischer-Tropsch synthesis, at least one second metal selected from the group consisting of iridium, rhodium, and mixtures thereof, and a promoter, wherein said promoter is an oxide of a metal selected from the group consisting of periodic groups IIIB, IVB, and VB, the lanthanides, the actinides, magnesium, and mixtures thereof, composited on an alumina support, said second metal being present in relatively lesser amounts than the cobalt content of the catalyst, said promoter ranging from about 0.1 to about 5 wt % of the catalyst, at a temperature, gas hourly space velocity and a pressure useful for promoting a Fischer-Tropsch Synthesis.

particular, when the catalysts of the Sapienza et al. patent are supported on alumina, they are distinguished by the complete absence of any x-ray diffraction peaks in the 2 .theta. range of 65 to 70 degrees. In x-ray diffraction .theta. equals the angle of refraction.

Brief Summary Text (11):
In a series of European patent applications (EP 110449, EP 142888, EP 167215, and EP 188304), Shell International described an improved F-T catalyst comprised of cobalt promoted by at least one of the metals in the group consisting of zirconium, titanium, and chromium, preferably supported on silica, alumina, or silica-alumina. The addition of Group VIII noble metals to zirconia-promoted cobalt catalysts was claimed in European patent application EP 221598, which teaches improved activity upon addition of platinum to a cobalt catalyst already promoted with zirconia. Thus, the Shell work shows that the addition of a Group VIII metal to a Fischer-Tropsch catalyst is only useful when the catalyst already incorporates a well known promoter, such as zirconia, as a main component of the catalyst.

Brief Summary Text (14):
It has been found in accordance with the present invention that synthesis gas comprising hydrogen and carbon monoxide can be converted to liquid hydrocarbons by using a process which includes the step of contacting such a synthesis gas feed over a catalyst comprising amounts of cobalt catalytically active in a Fischer-Tropsch Synthesis and at least one loading-insensitive second metal selected from the group consisting of platinum, iridium, and rhodium composited on an alumina support. The a finished catalyst exhibits a positive x-ray diffraction pattern having peaks in the 2.theta. range of about 65 to 70 degrees, where .theta. is the angle of refraction. The second metal is present in relatively lesser amounts than the cobalt content. The catalyst preferably contains from about 5 to 60 wt % cobalt and has a content of the second metal between about 0.1 and 50 wt % of the cobalt content of the catalyst. The alumina preferably is gamma alumina.

Brief Summary Text (15):
It has been found that the addition of one or more of the metals from the group consisting of platinum, iridium, and rhodium to a catalyst consisting predominantly of cobalt supported on alumina results in greatly enhanced activity for the conversion of synthesis gas to hydrocarbons. Platinum, iridium, and rhodium are not very active as Fischer-Tropsch catalysts on their own, and it has surprisingly been found that the addition of the other non-Fischer-Tropsch noble metals to a cobalt catalyst does not result in greatly improved activity. The improvement upon addition of platinum, iridium, or rhodium to a cobalt catalyst is surprisingly not observed when the catalytic components are distended on supports other than alumina, for example silica or titania.

Detailed Description Text (2):
The catalyst used in the process of the present invention comprises as the active catalytic ingredients cobalt and one or more metals from the group consisting of platinum, iridium, and rhodium supported on alumina with the second metal present in a relatively smaller amount than cobalt. The finished catalyst exhibits a positive x-ray diffraction pattern having peaks in the 2 .theta. range of about 65 to 70 degrees. This catalyst has been found to be highly active for the conversion of synthesis gas, a mixture of hydrogen and carbon monoxide, into a mixture of predominately paraffinic hydrocarbons. As indicated above, it has long been known that cobalt is an active catalyst for the F-T synthesis. It is also known that the addition of ruthenium to a cobalt catalyst gives improved activity, but ruthenium is known to be an active Fischer-Tropsch metal on its own. In our invention, it has been found that among the non-Fischer-Tropsch metals in Group VIII of the Periodic Table, some of these metals produce enhanced activity when added to a supported cobalt catalyst without the need to form solid solutions on the surface of the support, while others of these metals give no improvement. Although a number of supports have been studied in the present work and the improvement of this invention has only been observed with alumina, the discovery of another support exhibiting a similar effect would not be entirely surprising.

Detailed Description Text (20):
The reaction temperature is suitably between 150.degree. and 300.degree. C.; and more preferably between 175.degree. and 250.degree. C. The total pressure can be from atmospheric to around 100 atmospheres, preferably between 1 and 30 atmospheres. The gaseous hourly space velocity, based on the total amount of synthesis gas feed, is preferably between 100 and 20,000 cm.sup.3 of gas per gram of catalyst per hour;